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Health Insurance COVERAGE

in Small Towns
and Rural America:

The Role of Medicaid
Expansion



Georgetown University
Center for Children and Families
and the
University of North Carolina
NC Rural Health Research Program



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Health Insurance Coverage in Small Towns and Rural America: The Role of Medicaid Expansion

By Jack Hoadley, Joan Alker, and Mark Holmes

Key Findings

- The uninsured rate for low-income adult citizens (below 138 percent FPL) has come down since 2008/09 in nearly all states, but small towns and rural areas of states that have expanded Medicaid have seen the sharpest declines. The uninsured rate for this population dropped sharply from 35 percent to 16 percent in rural areas and small towns of Medicaid expansion states compared to a decline from 38 percent to 32 percent in non-expansion states between 2008/09 and 2015/16.
- States that experienced the biggest drop in uninsured rates for low-income adults living in small towns and rural areas are Arkansas, Colorado, Connecticut, Hawaii, Kentucky, Michigan, Nevada, New Mexico, Oregon, and West Virginia.
- Non-expansion states with the highest rate of uninsured low-income adults in small towns and rural areas are South Dakota, Georgia, Oklahoma, Florida, Texas, Alabama, Missouri, and Mississippi. Two states that more recently made decisions to expand Medicaid—Alaska and Louisiana—are also among the states with the highest uninsured rates for low-income adults in non-metro areas.
- The non-expansion states with the biggest coverage disparities between rural areas and small towns and metro areas are Virginia (which recently decided to expand Medicaid), Utah (which will vote this fall on a Medicaid ballot initiative), Florida, and Missouri. The experience in expansion states demonstrates the great opportunity for these states to bring down the uninsured rate in small towns and rural areas and narrow the gap between metro and rural areas.

Introduction

Medicaid has been a key factor in lowering the percentage of Americans who lack health insurance. Nationally, the uninsured rate for all Americans under the age of 65 (adults and children) fell dramatically between 2010 and 2016 from 18.2 percent to 10.4 percent, rising slightly to 10.7 percent in 2017.¹ Expansion of Medicaid coverage and the new availability of subsidized private insurance from the health care marketplaces helped drive down the uninsured rate, in turn strengthening the health care providers who treat these individuals.

In small towns and rural areas, the uninsured rate remains higher than in metropolitan areas. In a previous report, we highlighted how Medicaid offers a vital source of health coverage nationwide, but it plays an even more pronounced role in small towns and rural areas.² We found that Medicaid covers a larger share of nonelderly adults and children in rural and small-town areas than in metropolitan areas; this trend is strongest among children. These differences result in part from demographic and economic factors that characterize small towns and rural areas. For example, rural areas tend to have lower household incomes, lower rates of workforce participation, and higher rates of disability—all factors associated with Medicaid eligibility.³

State decisions around their Medicaid programs have resulted in uneven patterns of insurance coverage from state to state. Over the same time period (2010-2017) cited above, the national uninsured rate for children and nonelderly adults in expansion states fell from 16.4 percent to 7.6 percent. The rate in non-expansion states fell less significantly—from 20.3 percent to 15.7 percent.⁴



States that have not expanded Medicaid coverage to adults below 138 percent of the federal poverty line, regardless of their age and family circumstances, have many more uninsured adults. About 2.2 million poor adults live in non-expansion states and are not eligible for either Medicaid or subsidized Marketplace coverage under current law. Another 1.5 million adults in these states are eligible for subsidized Marketplace coverage but would find Medicaid more affordable.⁵

This paper examines the status of insurance coverage for low-income citizen adults in the 46 states with significant rural populations.⁶ Nationally, 14 percent of the U.S. nonelderly population resides in small towns and rural areas. Of that, about 6 percent are in rural (“noncore”) counties and 8 percent are in small-town (“micropolitan”) counties. In 16 states, the share of the nonelderly population that lives in small towns and rural areas comprises one-third or more of the population.⁷

Using data from the Census Bureau’s American Community Survey public use micro sample, this report examines uninsured rates at the county-level by age in 2008/09 and 2015/16.⁸ For most tables in this report, county-level data are aggregated to the state level. The county-level estimates used here are unique because they are two-year data, rather than the most recent five-year data (2012-2016) available from the Census Bureau. This distinction is important because the Affordable Care Act (ACA) was largely implemented in 2014, and thus the time periods analyzed here allow for an examination of the law’s effects in small towns and rural areas. Although county-level estimates are available for similar populations (e.g., the Small Area Health Insurance Estimates by the U.S. Census Bureau), we specifically wanted to estimate uninsured rates only for citizens.

Prior to the enactment of the ACA, Medicaid coverage for adults was mostly limited to very low-income parents, pregnant women, or those with a qualifying disability. States not accepting the option for Medicaid expansion in general have no eligibility for childless adults who are not disabled, and mandatory coverage levels for parents are very low—generally below 50 percent of the poverty level.⁹ These significant inequities in adults’ Medicaid income eligibility nationwide lead to disparities in the rate of uninsured adults.





Low-Income Adults Are More Likely to Have Insurance Coverage in Medicaid Expansion States with Larger Differences in Small Towns and Rural Areas

As described above, Medicaid eligibility for non-pregnant adults was limited prior to enactment of the ACA. All states are required to cover some parents but eligibility levels are very low.¹⁰ Furthermore, many states provided little or no eligibility for adults without a dependent child, regardless of income, unless they qualified based on a disability. States that expanded Medicaid as a result of the ACA offer coverage to more adult citizens.

As of January 1, 2014, when generous federal funding first became available for expanded Medicaid coverage, 24 states and the District of Columbia had implemented the new Medicaid eligibility levels.¹¹ Another seven states have implemented expanded Medicaid since that date—meaning that the full effect is not reflected in the data used for this report. Another two (Maine and Virginia) have made decisions to expand but have not yet implemented those decisions.

The impact of Medicaid expansion is dramatic. On average, the uninsured rate for adult citizens up to 138 percent of FPL was 13 percent in the states that expanded Medicaid by the end of 2014. By contrast, the rate was more than twice as high (27 percent) in non-expansion states (Figure 1). The difference is similarly great in small towns and rural areas: 16 percent uninsured in these areas of expansion states versus 32 percent in the non-expansion states. In the states that have expanded Medicaid, the uninsured rate in small towns and rural areas has fallen to a level that comes closer to that in metro areas (16 percent versus 12 percent).

Figure 1: Percent of low-income citizen adults who are uninsured by expansion status, 2015/16

| Expansion Status of States | Number of States | Uninsured Citizen Adults with Incomes to 138 Percent FPL | | |
|----------------------------|------------------|--|-------|-----------|
| | | All Areas | Metro | Non-metro |
| Yes, by end of 2014 | 22 | 13% | 12% | 16% |
| Late Expanders | 5 | 23% | 22% | 30% |
| No Expansion | 19 | 27% | 26% | 32% |
| All states | 46 | 20% | 18% | 26% |

Note: States with few or no non-metro counties are excluded (DC, DE, MA, NJ, RI). States that expanded Medicaid effective in 2014 are categorized as “yes, by end of 2014.” States that expanded Medicaid between January 1, 2015, and December 31, 2016, are categorized as “Late Expanders.” Two states that have made decisions to expand Medicaid but where enrollment has not begun (ME, VA) are categorized as “no expansion.” For a list of states in each category, see the methodology.



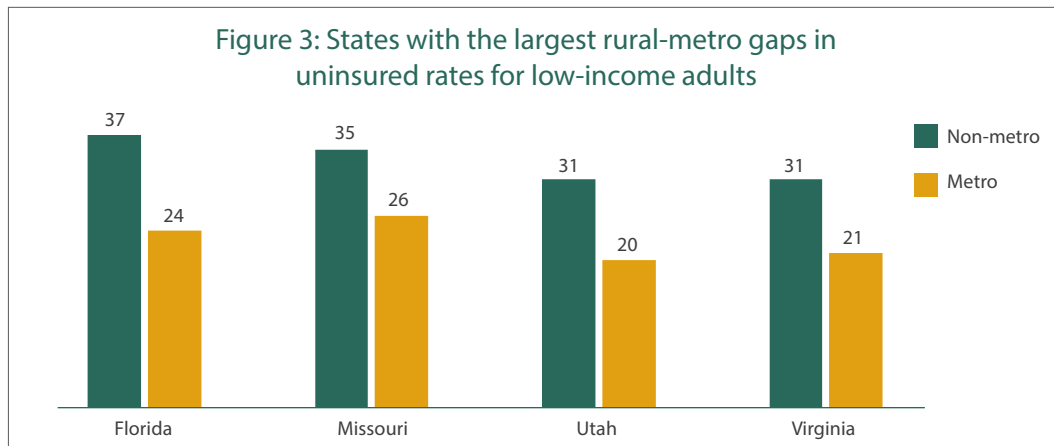
Eight non-expansion states have more than one-third of their low-income adults uninsured in their small towns and rural areas. The states with the highest rate of uninsured adults in rural areas are South Dakota, Georgia, Oklahoma, Florida, Texas, Alabama, Missouri, and Mississippi (Figure 2). This means that these states have significant room to improve coverage for low-income adults and strengthen the providers and hospitals that serve rural areas and small towns.

Figure 2: Share of low-income uninsured citizen adults in rural and metro areas in non-expansion states, 2015/16

| States without Medicaid expansion | Non-metro adults to 138% FPL uninsured, 2015/16 (percent) | Metro adults to 138% FPL uninsured, 2015/16 (percent) |
|-----------------------------------|---|---|
| South Dakota | 47 | 41 |
| Georgia | 38 | 30 |
| Oklahoma | 38 | 32 |
| Florida | 37 | 24 |
| Texas | 36 | 29 |
| Alabama | 36 | 29 |
| Missouri | 35 | 26 |
| Mississippi | 35 | 33 |
| South Carolina | 32 | 27 |
| Utah | 31 | 20 |
| Virginia* | 31 | 21 |
| North Carolina | 29 | 25 |
| Tennessee | 29 | 25 |
| Wyoming | 28 | 29 |
| Idaho | 28 | 31 |
| Nebraska | 24 | 19 |
| Kansas | 24 | 25 |
| Maine* | 23 | 19 |
| Wisconsin | 18 | 13 |

*Maine and Virginia have made decisions to expand, but enrollment has not yet begun.

In most non-expansion states there is a substantial gap in the uninsured rate, with a greater share of the low-income adult population lacking insurance in small towns and rural areas compared to those in metropolitan areas. Florida, Missouri, Utah, and Virginia have gaps of 10 percentage points or more between these rates in non-metro versus metro areas (Figure 3). Low-income adults in the rural areas and small towns of these states would likely see sharp improvements in their ability to obtain insurance coverage if state officials expanded Medicaid.



Most states that have expanded their Medicaid programs now have substantially lower uninsured rates (Figure 4). In all the original expansion states, the uninsured rate for low-income adults in small towns and rural areas is below one-fourth of the population, and in four states that rate is 10 percent or lower.

Figure 4: Share of low-income uninsured citizen adults in rural areas and metro areas of expansion states, 2015/16

| Expansion States | Non-metro adults to 138% FPL uninsured, 2015/16 (percent) | Metro adults to 138% FPL uninsured, 2015/16 (percent) |
|------------------|---|---|
| Hawaii | 9 | 9 |
| Connecticut | 9 | 11 |
| Vermont | 10 | 3 |
| Maryland | 10 | 12 |
| Illinois | 12 | 12 |
| Minnesota | 13 | 9 |
| Kentucky | 13 | 13 |
| Washington | 13 | 11 |
| Colorado | 13 | 11 |
| Nevada | 14 | 17 |
| West Virginia | 14 | 13 |
| New York | 14 | 10 |
| Iowa | 15 | 13 |
| California | 15 | 11 |
| Michigan | 16 | 13 |
| Oregon | 17 | 13 |
| Ohio | 18 | 15 |
| New Hampshire | 20 | 19 |
| New Mexico | 21 | 15 |
| Arkansas | 22 | 21 |
| Arizona | 23 | 18 |
| North Dakota | 24 | 17 |

*The five states that expanded Medicaid through the ACA after December 31, 2014, are excluded from this table (Alaska, Indiana, Louisiana, Montana, and Pennsylvania).



Furthermore, most expansion states have no gap in the level of uninsured adults between non-metro and metro areas. In half (11 of 22) of the states that expanded Medicaid by the end of 2014, the uninsured rate in the non-metro areas is lower than in metro areas or no more than two percentage points higher (Arkansas, Colorado, Connecticut, Hawaii, Illinois, Kentucky, Maryland, Nevada, New Hampshire, Washington, and West Virginia). These states have experienced the greatest success in eliminating the metro-non-metro disparity in insurance coverage.

Furthermore, most expansion states have no gap in the level of uninsured adults between non-metro and metro areas.

Three states—Arkansas, Kentucky, and West Virginia—where expansion has dramatically lowered uninsured rates for all low-income citizen adults have no rural-metro gap.

The experience in expansion states demonstrates the potential for states that have not yet expanded Medicaid. Not only do they have the chance to reduce the number of uninsured adults overall, but they have a significant opportunity to bring down the uninsured rate in small towns and rural areas that currently have more uninsured adults and narrow the gap between metro and rural areas.

Medicaid Expansion States Experienced Large Declines in Uninsured Rates, Especially in Small Towns and Rural Areas

The impact of Medicaid expansion can be examined by comparing the uninsured rates for low-income citizen adults before and after the implementation of the ACA—from 2008/09 to 2015/16. In nearly all states, uninsured rates have come down. Across all states with a substantial number of small towns and rural areas, the average decline in the uninsured rate for this adult population below 138 percent of the poverty line was 14 percentage points, dropping from 34 percent to 20 percent uninsured. The drop was a little less in non-metro counties (11 percentage points) than in metro counties (15 percentage points). (Figure 5). Not surprisingly, the decline in the uninsured rate was much greater in expansion states, where the rate fell from 30 percent to 13 percent (18 percentage points) than in non-expansion states where it fell from 38 percent to 27 percent (11 percentage points).

Figure 5: Decline in uninsured rate for low-income citizen adults in all areas and in non-metro counties, by expansion status, 2008/09 to 2015/16 (percentage points)

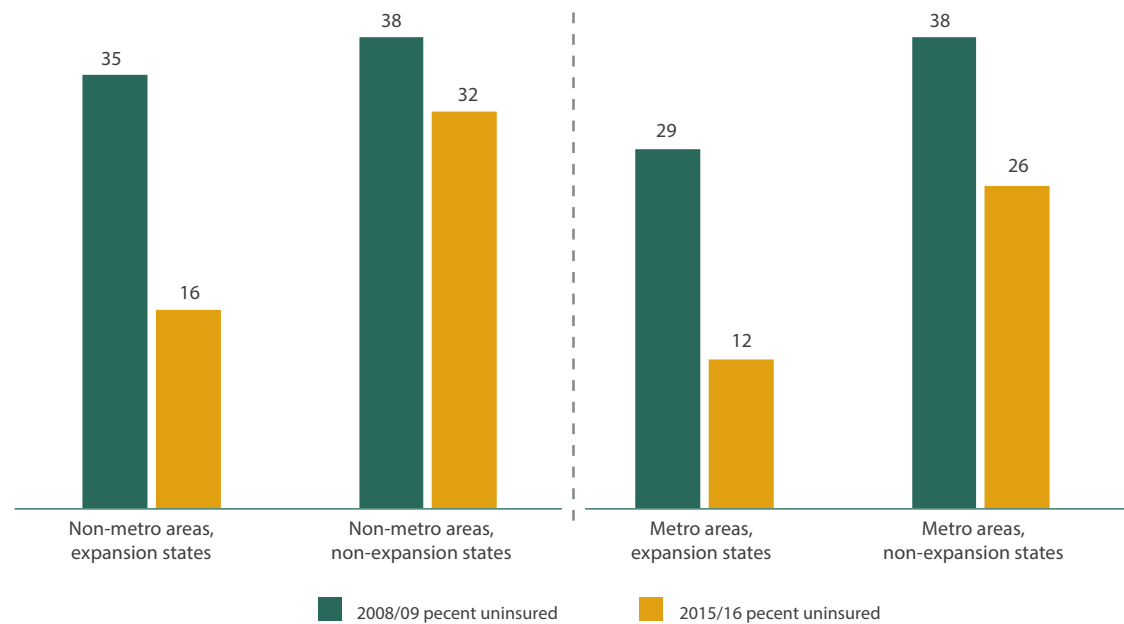
| Expansion Status of States | All Areas | | | Non-metro Areas | | | Metro Areas | | |
|----------------------------|----------------------------|----------------------------|----------------------------------|----------------------------|----------------------------|----------------------------------|----------------------------|----------------------------|----------------------------------|
| | Percent Uninsured, 2008/09 | Percent Uninsured, 2015/16 | Decline in Uninsured (pct. pts.) | Percent Uninsured, 2008/09 | Percent Uninsured, 2015/16 | Decline in Uninsured (pct. pts.) | Percent Uninsured, 2008/09 | Percent Uninsured, 2015/16 | Decline in Uninsured (pct. pts.) |
| Yes, by end of 2014 | 30 | 13 | 18 | 35 | 16 | 19 | 29 | 12 | 17 |
| Late Expanders | 37 | 23 | 13 | 41 | 30 | 11 | 35 | 22 | 14 |
| No Expansion | 38 | 27 | 11 | 38 | 32 | 5 | 38 | 26 | 13 |
| All states | 34 | 20 | 14 | 37 | 26 | 11 | 33 | 18 | 15 |

Note: States with few or no non-metro counties are excluded. States that expanded Medicaid effective in 2014 are categorized as “yes, by end of 2014.” States that expanded Medicaid between January 1, 2015, and December 31, 2016, are categorized as “Late Expanders.” Two states that have made decisions to expand Medicaid but where enrollment has not begun (ME, VA) are categorized as “no expansion.” For a list of states in each category, see the methodology. Differences may vary due to rounding.



The contrast was especially striking in small towns and rural areas: a decline of 19 percentage points in expansion states versus just 5 points in non-expansion states (Figure 6). In expansion states, the non-metro uninsured rate for low-income citizen adults fell from 35 percent to 16 percent between 2008/09 to 2015/16. In the non-expansion states, the decline was from 38 percent to 32 percent. This result underscores that the Medicaid expansion has been the key driver as the ACA was implemented in reducing the number of uninsured adults in rural areas and small towns nationwide.

Figure 6. Decline in uninsured rate for low-income citizen adults, by expansion status, 2008/09 to 2015/16



Note: States with few or no non-metro counties and “late expander” states are excluded. For a list of states in each category, see the methodology.

A look at individual states shows how dramatic the change has been in the small towns and rural areas of these states. In 10 expansion states (Colorado, Nevada, Kentucky, Oregon, New Mexico, Arkansas, Connecticut, Hawaii, Michigan, and West Virginia), the drop in the uninsured rate for low-income citizen adults in these areas has been 20 percentage points or greater (Figure 7). None of the non-expansion states has experienced a drop in the uninsured rate of this magnitude.



Figure 7: Decline in uninsured rate for low-income citizen adults in non-metro counties, by state and expansion status, 2008/09 to 2015/16 (percentage points)

| Expansion State | 2008/09 | 2015/16 | Drop | Non-Expansion State | 2008/09 | 2015/16 | Drop |
|-----------------|---------|---------|------|---------------------|---------|---------|------|
| Colorado | 42% | 13% | 29 | Wyoming | 47% | 28% | 19 |
| Nevada | 42% | 14% | 28 | Florida | 53% | 37% | 16 |
| Kentucky | 40% | 13% | 27 | Nebraska | 39% | 24% | 15 |
| Oregon | 43% | 17% | 27 | Idaho | 38% | 28% | 10 |
| New Mexico | 46% | 21% | 25 | Oklahoma | 47% | 38% | 9 |
| Arkansas | 45% | 22% | 23 | Wisconsin | 27% | 18% | 9 |
| Connecticut | 32% | 9% | 23 | North Carolina | 35% | 29% | 7 |
| Hawaii | 31% | 9% | 22 | Kansas | 30% | 24% | 6 |
| Michigan | 38% | 16% | 22 | Tennessee | 35% | 29% | 6 |
| West Virginia | 35% | 14% | 21 | South Carolina | 38% | 32% | 5 |
| Maryland | 29% | 10% | 18 | Mississippi | 39% | 35% | 5 |
| Washington | 31% | 13% | 18 | Georgia | 43% | 38% | 4 |
| Ohio | 35% | 18% | 18 | Texas | 40% | 36% | 4 |
| Illinois | 29% | 12% | 17 | Utah | 34% | 31% | 3 |
| New Hampshire | 36% | 20% | 17 | Virginia | 33% | 31% | 2 |
| California | 30% | 15% | 15 | Missouri | 35% | 35% | 1 |
| Vermont | 22% | 10% | 12 | Maine | 22% | 23% | -1 |
| Iowa | 27% | 15% | 12 | Alabama | 35% | 36% | -1 |
| Minnesota | 24% | 13% | 11 | South Dakota | 37% | 47% | -10 |
| New York | 24% | 14% | 10 | | | | |
| North Dakota | 32% | 24% | 9 | | | | |
| Arizona | 31% | 23% | 8 | | | | |

Note: States with few or no non-metro counties and states that expanded Medicaid between January 1, 2015, and December 31, 2016, are excluded. States that expanded Medicaid effective in 2014 are categorized as “expansion states.” Two states that have made decisions to expand Medicaid but where enrollment has not begun (ME, VA) are categorized as “non-expansion” states. Differences may vary due to rounding.



Parents Represent About One-Fourth of Uninsured Low-Income Adults

About one-fourth of all remaining uninsured citizen adults are parents. This uninsured share is similar in both small towns and rural areas (24 percent) and in metro counties (27 percent). Parents include adults with a child in the household and so may include grandparents or other adult caretakers.

When parents have insurance coverage, children benefit as well. Children with insured parents are more likely to be insured themselves.¹² Children are also more likely to get preventive care, and the entire family is assured of the financial protection that Medicaid offers from medical debt and bankruptcy.¹³

As discussed above, some parents have been eligible for Medicaid coverage prior to the ACA, although only at very low income levels. Furthermore, eligible adults without children are less likely to enroll in Medicaid than eligible parents, and both are less likely to enroll than eligible children.¹⁴ These factors help explain why more of the uninsured adults have no children. In addition, parents may be more aware of insurance options when their children are covered by Medicaid or CHIP and their state has made outreach efforts to get families enrolled.

There is a soft dividing line between the categories of parents and “childless” adults. Those classified as childless adults may include parents whose children are no longer in the household because they are older or are currently living with a different family member. They may be fathers no longer living in the household that includes their children. Still others are younger women of childbearing age who may become parents in the near future. A recent study of women in Ohio after Medicaid was expanded found higher rates of prenatal vitamin use and recommended prenatal screenings.¹⁵ This finding underscores the importance of expansion in covering women before they qualify for pregnancy related Medicaid.

Case Studies: Virginia, Florida, Utah, and Missouri

Four states—Virginia, Florida, Utah, and Missouri—have especially wide gaps in uninsured rates between the non-metro and metro counties.



Virginia

Virginia acted in 2018 to expand its Medicaid program, and enrollment is expected to start on January 1, 2019. As Figure 8 shows, rural areas and small towns in Virginia have more room to gain from the decision to expand than Virginia’s metropolitan counties. Although statewide, the uninsured rate for low-income adults came down from 34 percent to 24 percent since the ACA was implemented, the uninsured rate for adults below 138 percent of the poverty line in Virginia’s small towns and rural areas remained considerably higher (31 percent) than in its metropolitan cities and counties (21 percent). Nine of the 10 non-metro counties or cities with the largest number of low-income uninsured adults have uninsured rates of at least 30 percent. By contrast, nine of the 10 metro counties or cities with the largest number of low-income uninsured adults have rates no higher than 24 percent. Uninsured rates for adults should come down considerably statewide once expansion is implemented.



Figure 8: Virginia Counties and Cities with the Most Uninsured Citizen Adults Under 138% FPL

| Non-metro counties or cities with the most uninsured adults | Adults to 138% FPL uninsured, 2015/16 (percent) | Metro counties or cities with the most uninsured adults | Adults to 138% FPL uninsured, 2015/16 (percent) |
|---|---|---|---|
| All non-metro counties and cities | 31 | All metro counties and cities | 21 |
| Pittsylvania County | 30 | Fairfax County | 15 |
| Henry County | 30 | Virginia Beach City | 22 |
| Wise County | 34 | Norfolk City | 22 |
| Danville City | 31 | Richmond City | 24 |
| Tazewell County | 34 | Henrico County | 20 |
| Buchanan County | 37 | Prince William County | 21 |
| Lee County | 36 | Chesapeake City | 20 |
| Halifax County | 31 | Newport News City | 20 |
| Carroll County | 28 | Hampton City | 26 |
| Russell County | 34 | Chesterfield County | 18 |

If Virginia can achieve the same results as in the neighboring state of Kentucky (see text box on page 12), which expanded Medicaid in the first year permitted under the ACA, Virginia could achieve similarly dramatic results for those living in small towns and rural areas. The experience in Kentucky and many other expansion states suggest that the uninsured gap between those living in metro areas compared to those in rural areas and small towns should be reduced or eliminated.



Florida

Florida is another state where our data show that Medicaid expansion would have a large effect on uninsured rates for adults statewide and a substantially disproportionate benefit for rural areas and small towns. In Florida the uninsured rate for low-income adults in rural counties is 37 percent as opposed to 24 percent in metro counties of the state (Figure 9). In several rural counties, uninsured rates for low-income adults are 40 percent or greater.

Figure 9: Florida Counties with the Most Uninsured Citizen Adults Under 138% FPL

| Non-metro counties with the most uninsured adults | Adults to 138% FPL uninsured, 2015/16 (percent) | Metro counties with the most uninsured adults | Adults to 138% FPL uninsured, 2015/16 (percent) |
|---|---|---|---|
| All non-metro counties | 37 | All metro counties | 24 |
| Putnam | 37 | Miami-Dade | 22 |
| Columbia | 40 | Broward | 22 |
| Jackson | 42 | Orange | 25 |
| Suwannee | 34 | Hillsborough | 22 |
| Okeechobee | 36 | Palm Beach | 20 |



Utah

Utah is actively considering expansion with a ballot initiative scheduled this year. The five non-metro counties with the largest number of low-income uninsured adults, have uninsured rates of at least 30 percent, whereas none of the metro counties with the most uninsured adults reaches this level (Figure 10).

Figure 10: Utah Counties with the Most Uninsured Citizen Adults Under 138% FPL

| Non-metro counties with the most uninsured adults | Adults to 138% FPL uninsured, 2015/16 (percent) | Metro counties with the most uninsured adults | Adults to 138% FPL uninsured, 2015/16 (percent) |
|---|---|---|---|
| All non-metro counties | 31 | All metro counties | 20 |
| Iron | 30 | Salt Lake | 22 |
| Uintah | 35 | Utah | 17 |
| Sanpete | 30 | Davis | 13 |
| Sevier | 31 | Weber | 24 |
| San Juan | 42 | Washington | 26 |



Missouri

Missouri also has a much higher uninsured rate in non-metro counties (35 percent) than in metro counties (26 percent) (Figure 11). Like Virginia, there was some success in achieving lower uninsured rates for low-income citizen adults statewide as a result of the implementation of the ACA's Marketplace subsidies—a drop from 39 percent to 29 percent. But that gain was not seen in small towns and rural areas, where the uninsured rate was virtually unchanged at 35 percent. In other words, rural areas and small towns in Missouri will only see significant coverage gains from the ACA if the state chooses to expand Medicaid.

Figure 11: Missouri Counties and Cities with the Most Uninsured Citizen Adults Under 138% FPL

| Non-metro counties with the most uninsured adults | Adults to 138% FPL uninsured, 2015/16 (percent) | Metro counties or cities with the most uninsured adults | Adults to 138% FPL uninsured, 2015/16 (percent) |
|---|---|---|---|
| All non-metro counties and cities | 35 | All metro counties and cities | 26 |
| Taney County | 39 | St. Louis County | 20 |
| Butler County | 41 | Jackson County | 27 |
| St. Francois County | 37 | St. Louis City | 28 |
| Howell County | 37 | Greene County | 27 |
| Dunkirk County | 35 | Jefferson County | 32 |



Success of Medicaid Expansion in Kentucky for Rural Areas

Kentucky was an early adopter of Medicaid expansion with considerable success in dramatically reducing the uninsured rate for low-income adults from 43 percent in 2008/09 statewide to 13 percent in 2015/16. The low level was particularly striking in small towns and rural areas of the state.

Figure 12. Kentucky Counties with the Most Uninsured Citizen Adults Under 138% FPL

| Non-metro counties with the most uninsured adults | Adults to 138% FPL uninsured, 2015-2016 (percent) | Metro counties with the most uninsured adults | Adults to 138% FPL uninsured, 2015-2016 (percent) |
|---|---|---|---|
| All nonmetro counties | 13 | All metro counties | 13 |
| Pike | 9 | Jefferson | 10 |
| Pulaski | 14 | Fayette | 14 |
| Madison | 6 | Kenton | 16 |
| Floyd | 9 | Warren | 11 |
| Laurel | 13 | Daviess | 10 |
| Harlan | 11 | Christian | 18 |
| Knox | 12 | Hardin | 17 |
| McCreary | 16 | Campbell | 12 |
| Clay | 14 | Boone | 20 |
| Bell | 12 | Boyd | 14 |

Conclusion

States that have expanded Medicaid under the ACA have seen broad gains in insurance coverage for low-income adults. Rural areas and small towns have seen disproportionate benefits with little or no disparity in coverage rates between metro and rural areas. Medicaid expansion makes a difference for many reasons, including the likelihood that Marketplace coverage is more challenging to sell in rural areas and small towns,¹⁶ and rural areas have higher rates of poverty on average.

Increased insurance coverage in turn benefits the clinics, hospitals, and other providers that operate in these states, especially in rural communities. An earlier study we conducted found significant differences between providers operating in states that opted to expand Medicaid and those that did not.¹⁷ The benefits of Medicaid expansion have been experienced beyond the walls of health care facilities such as clinics and hospitals with positive ripple effects throughout the communities they serve.

Community health centers that serve patients in Medicaid expansion states have experienced a 11 percentage point decline in their share of uninsured patients and a 13 percentage point increase in Medicaid patients.¹⁸ Clinics in rural areas of expansion states also have experienced increases on quality measures such as asthma treatment and hypertension control and provided more patient visits in areas such as mammograms and substance abuse disorders. These gains at rural clinics were not duplicated in urban clinics in those same states, perhaps because patients in urban areas have more access to providers other than these clinics.

Another recent study found that Medicaid expansion contributed to a rosier financial picture for hospitals and less likelihood of hospital closures, especially those in rural areas.¹⁹ Notably, the study found higher rates of rural hospital closures in states that failed to expand Medicaid. The revenue hospitals receive from Medicaid when patients have this source of coverage improves



the bottom line and keeps them open. Keeping a rural community hospital open means that care is available to all residents of the community on a timelier basis and maintains a major employer for the community.²⁰

Our study found that those states that have not yet expanded Medicaid have some of the largest gaps in uninsured rates with rural areas and small towns having substantially higher rates of uninsured low-income

adults. Many states that have not yet expanded have sizable rural populations (including Idaho, Mississippi, Nebraska, Oklahoma, South Dakota and Wyoming). Improved coverage rates typically translate to a more stable health care system, and in particular help rural areas and small towns maintain the availability of health care providers in areas where shortages are all too common.



Methodology

This report relies primarily on data from the Census Bureau's American Community Survey (ACS) public use micro sample to calculate uninsured rates at the county level for nonelderly adults (age 19 to 64) for 2016. We restrict the sample of adults in two ways. First, we study only those individuals with incomes below 138 percent of the federal poverty guidelines. Second, we study only adults who are citizens, including naturalized citizens. For one section of the analysis, we differentiate low-income citizen adults by whether they have children under age 18 who live in the household. Similar data for both children and nonelderly adults who were covered by Medicaid or who were uninsured in 2009 and 2015 were calculated for an earlier report.²¹

Although the estimates are for 2016, we use data from 2015 and 2016 in order to increase the precision of the estimates, with totals normed to 2016 levels. The two-year time frames used in this report provide a different perspective compared to the single-year ACS summary estimates. Those are available at the national and state levels, as well as for a selection of counties. The five-year ACS summary estimates are available for all counties in the United States. However, these data are from 2012 through 2016, whereas the analytical approach in this report provides us with more recent complete county-level data for 2015 through 2016. State tables shown in the report are aggregated from the county estimates.

Method for Estimating the Number of Uninsured Individuals per County

Annual, county-level numbers of uninsured citizens do not exist in a consistent manner across all years and states. Thus, we developed synthetic estimates using the Public Use Microdata Sample (PUMS) of the ACS to estimate annual, county-level estimates for each of three age groups

using a three-step approach to calculate.²² Effectively, the approach takes the statewide estimated number of uninsured adults, using the insurance coverage variable (HICOV) to define whether the respondent had insurance coverage. The approach then allocates them across counties according to the degree to which the county's demographics make them likely to be uninsured.

Step 1: Modeling individual probabilities

First, we used the PUMS to model factors associated with an individual's probability of being uninsured. We pooled data for 2015/16, adding an indicator for whether the observation was from 2016. An individual was identified as being "enrolled" if they indicated they were uninsured. We estimated a separate linear probability model for each state and the District of Columbia, age category (0 to 18, 19 to 64, 65 or older), for a total of 51 states x 3 age categories for 153 models. We estimated the probability an individual was uninsured as a function of 18 age indicators (five year increments: 0-4, 5-9, continuing through 80-84, and 85 or more), sex, age interacted with sex, 14 race/ethnicity categories (Hispanic status crossed with race, including "other" and "two or more races"), 5 income categories (under 50, 50-99 percent FPL, 100-149 percent FPL, 150-199 percent FPL, 200 percent FPL), family status (marriage status interacted with whether there are children in the household), disability interacted with income category, indicators for whether the individual was born in the United States or was a naturalized citizen, and indicators for the Public Use Microdata Area (PUMA) of the respondent. For adults, labor force status (industry of employment, unemployed, or not in labor force) was also included. Sampling weights were used to ensure the sample was representative of the state population.

A separate analysis was done to calculate uninsured rates for 2008/09.



Step 2: Developing Small Area Estimates

We collected county-level data on corresponding characteristics from the ACS summary data. For example, for each county we calculated the proportion working in each industry, the age/income profile, and the age/sex/nativity profile. Usually, these data were pulled from the five-year (2012-2016) estimates published through American FactFinder. Using the Missouri Master Area Block Level Equivalency (MABLE) data engine provided by the Missouri Census Data Center,²³ we developed crosswalks from county to PUMA so the PUMA of the ACS PUMS could be used to generate county-specific estimates that could be allocated to PUMAs. For example, if 60 percent of the population of a county was in PUMA 101, and 40 percent was in PUMA 102, the PUMA indicators from the PUMS models would have .6 for PUMA 101 and .4 for PUMA 102, with 0 for the rest of the PUMA indicators (counties spanning multiple PUMAs were allocated proportionally by 2010 Census population). Thus, we generate a county-level dataset of the population in each county in the state. These data were then used with the parameter estimates from Step 1 to develop the average probability in the county of being uninsured. This probability, multiplied by the county population in the age group, served as the initial estimate of the number of uninsured individuals in the county.

Step 3: Raking Estimates

The sum of the county estimates aggregated to the state may differ from the direct state estimates in ACS. Therefore, the county estimates were adjusted (raked) to ensure the sum of the county estimates in a state equals the estimated state total.²⁴ For example, if the number of uninsured summed across counties was 100 but the state estimate was 110, each county estimate was increased by 10 percent as long as the county's uninsured count did not exceed its total population. The number of uninsured in the second year of the two-year time period (i.e. 2016) was used as the "target" for each state/age group/period; this approach trades off the increased precision and sample size from the two-year time period against the accuracy from using the second year only. For example, the number of enrollees in 2016 may be considerably higher than in 2015 due to reduced uninsured rates resulting from Medicaid expansion and other changes initiated by the Affordable Care Act. This approach ensures the county-level estimates aggregate to the state estimates.

Estimating Income Levels for Adults

From the ACS, we know (for each county) the number of families by family type by ratio of income to poverty.²⁵ For example, table B17022 indicates the number of families with no children with income below 130 percent of poverty and between 130 and 149 percent of poverty. Table B17025 indicates the number of citizens below 100 percent of poverty. We triangulate among these data, using the ACS microdata, to estimate the number of

citizens with incomes below 138 percent of poverty using an approach similar to that for estimating the number of uninsured.

Classifying Counties as Small Towns and Rural Areas

In this report, we classify counties as metropolitan and non-metropolitan. The latter category combines the Census Bureau categories of micropolitan or small town counties (those with central urban areas of no more than 50,000 people) and noncore or rural counties. We characterize non-metro counties as representing America's small towns and rural areas.

In four states (DC, DE, NJ, RI), no counties are classified as non-metro and are thus excluded from this report. In addition, we exclude Massachusetts, where the total non-metro population is less than 2 percent of the state's population (only 100,000 people).

The limitation of a county-based definition of small towns and rural areas is that county size and county boundaries vary considerably by state. For example, San Bernardino County, California, has 2 million people and runs from urbanized areas near Los Angeles through deserts and mountains to the Nevada border. Its classification as a metropolitan county thus effectively misclassifies people living in the small town and rural areas of that county. By contrast, states such as Georgia and Kansas have much smaller counties allowing more residents to be accurately classified as metro or non-metro. The Census Bureau also uses another definition of urban and rural; but it is built up from census tract data and thus is not readily amenable to classifying counties.²⁶ One recent report by the Kaiser Family Foundation defines rural counties based on an index of relative rurality, which is based on population size, population density, extent of urbanized area, and distance to the nearest metro area.²⁷ This produces a different classification of the population, which could lead to different findings.

Classifying States Based on Medicaid Expansion

In this report, states are classified for their Medicaid expansion status based on analysis by the Kaiser Family Foundation.²⁹ States that expanded Medicaid effective by the end of 2014 are categorized as "yes, by end of 2014." States that expanded Medicaid between January 1, 2015, and December 31, 2016, (Alaska, Indiana, Louisiana, Montana, and Pennsylvania) are categorized as "late expanders." The Census data for this analysis are based on surveys conducted throughout 2015 and 2016, so the Medicaid expansion in these states was not effective throughout the survey period. Two states that have made decisions to expand Medicaid but where enrollment has not begun (Maine and Virginia) are categorized as "no expansion."



Appendix Table 1: Share of uninsured citizen adults with incomes up to 138 percent of FPL in small towns and rural areas and in metro areas, 2015/16

| State | Expanded | All areas uninsured rate, 2015/16 (percent) | Non-metro uninsured rate, 2015/16 (percent) | Metro uninsured rate, 2015/16 (percent) |
|----------------|----------|---|---|---|
| United States | | 20 | 26 | 18 |
| Alabama | N | 31 | 36 | 29 |
| Alaska | Y** | 34 | 43 | 26 |
| Arizona | Y | 19 | 23 | 18 |
| Arkansas | Y | 21 | 22 | 21 |
| California | Y | 11 | 15 | 11 |
| Colorado | Y | 12 | 13 | 11 |
| Connecticut | Y | 11 | 9 | 11 |
| Florida | N | 25 | 37 | 24 |
| Georgia | N | 32 | 38 | 30 |
| Hawaii | Y | 9 | 9 | 9 |
| Idaho | N | 30 | 28 | 31 |
| Illinois | Y | 12 | 12 | 12 |
| Indiana | Y** | 24 | 26 | 23 |
| Iowa | Y | 14 | 15 | 13 |
| Kansas | N | 24 | 24 | 25 |
| Kentucky | Y | 13 | 13 | 13 |
| Louisiana | Y** | 33 | 39 | 31 |
| Maine | N*** | 21 | 23 | 19 |
| Maryland | Y | 12 | 10 | 12 |
| Michigan | Y | 14 | 16 | 13 |
| Minnesota | Y | 10 | 13 | 9 |
| Mississippi | N | 34 | 35 | 33 |
| Missouri | N | 29 | 35 | 26 |
| Montana | Y** | 33 | 34 | 32 |
| Nebraska | N | 21 | 24 | 19 |
| Nevada | Y | 17 | 14 | 17 |
| New Hampshire | Y | 19 | 20 | 19 |
| New Mexico | Y | 17 | 21 | 15 |
| New York | Y | 10 | 14 | 10 |
| North Carolina | N | 26 | 29 | 25 |
| North Dakota | Y | 21 | 24 | 17 |
| Ohio | Y | 16 | 18 | 15 |
| Oklahoma | N | 35 | 38 | 32 |
| Oregon | Y | 14 | 17 | 13 |
| Pennsylvania | Y** | 17 | 21 | 16 |
| South Carolina | N | 28 | 32 | 27 |
| South Dakota | N | 45 | 47 | 41 |
| Tennessee | N | 26 | 29 | 25 |
| Texas | N | 30 | 36 | 29 |
| Utah | N | 21 | 31 | 20 |
| Vermont | Y | 8 | 10 | 3 |
| Virginia | N*** | 24 | 31 | 21 |
| Washington | Y | 11 | 13 | 11 |
| West Virginia | Y | 13 | 14 | 13 |
| Wisconsin | N | 14 | 18 | 13 |
| Wyoming | N | 28 | 28 | 29 |

See appendix table notes on page 18.



Appendix Table 2: Change in share of uninsured citizen adults with incomes up to 138 percent of FPL in small towns and rural areas and in metro areas, 2008/09 and 2015/16

| State | Expanded | Metro counties | | | Non-metro counties | | |
|----------------|----------|--------------------------|---------|----------------------|--------------------------|---------|----------------------|
| | | Uninsured rate (percent) | | decline (pct points) | uninsured rate (percent) | | decline (pct points) |
| | | 2008/09 | 2015/16 | 2008/09 to 2015/16 | 2008/09 | 2015/16 | 2008/09 to 2015/16 |
| United States* | | 33 | 18 | 15 | 37 | 26 | 11 |
| Alabama | N | 44 | 29 | 15 | 35 | 36 | -1 |
| Alaska | Y** | 56 | 26 | 30 | 45 | 43 | 2 |
| Arizona | Y | 28 | 18 | 9 | 31 | 23 | 8 |
| Arkansas | Y | 47 | 21 | 26 | 45 | 22 | 23 |
| California | Y | 28 | 11 | 17 | 30 | 15 | 15 |
| Colorado | Y | 29 | 11 | 18 | 42 | 13 | 29 |
| Connecticut | Y | 22 | 11 | 12 | 32 | 9 | 23 |
| Florida | N | 38 | 24 | 14 | 53 | 37 | 16 |
| Georgia | N | 42 | 30 | 12 | 43 | 38 | 4 |
| Hawaii | Y | 19 | 9 | 9 | 31 | 9 | 22 |
| Idaho | N | 43 | 31 | 12 | 38 | 28 | 10 |
| Illinois | Y | 33 | 12 | 21 | 29 | 12 | 17 |
| Indiana | Y** | 40 | 23 | 17 | 39 | 26 | 13 |
| Iowa | Y | 30 | 13 | 17 | 27 | 15 | 12 |
| Kansas | N | 38 | 25 | 13 | 30 | 24 | 6 |
| Kentucky | Y | 48 | 13 | 35 | 40 | 13 | 27 |
| Louisiana | Y** | 45 | 31 | 15 | 50 | 39 | 11 |
| Maine | N*** | 29 | 19 | 10 | 22 | 23 | -1 |
| Maryland | Y | 29 | 12 | 17 | 29 | 10 | 18 |
| Michigan | Y | 34 | 13 | 21 | 38 | 16 | 22 |
| Minnesota | Y | 24 | 9 | 15 | 24 | 13 | 11 |
| Mississippi | N | 54 | 33 | 21 | 39 | 35 | 5 |
| Missouri | N | 41 | 26 | 15 | 35 | 35 | 1 |
| Montana | Y** | 49 | 32 | 17 | 45 | 34 | 10 |
| Nebraska | N | 28 | 19 | 9 | 39 | 24 | 15 |
| Nevada | Y | 37 | 17 | 19 | 42 | 14 | 28 |
| New Hampshire | Y | 36 | 19 | 17 | 36 | 20 | 17 |
| New Mexico | Y | 31 | 15 | 16 | 46 | 21 | 25 |
| New York | Y | 21 | 10 | 11 | 24 | 14 | 10 |
| North Carolina | N | 37 | 25 | 13 | 35 | 29 | 7 |
| North Dakota | Y | 42 | 17 | 24 | 32 | 24 | 9 |
| Ohio | Y | 37 | 15 | 22 | 35 | 18 | 18 |
| Oklahoma | N | 46 | 32 | 14 | 47 | 38 | 9 |
| Oregon | Y | 37 | 13 | 23 | 43 | 17 | 27 |
| Pennsylvania | Y** | 28 | 16 | 12 | 35 | 21 | 13 |
| South Carolina | N | 44 | 27 | 16 | 38 | 32 | 5 |
| South Dakota | N | 50 | 41 | 9 | 37 | 47 | -10 |
| Tennessee | N | 38 | 25 | 12 | 35 | 29 | 6 |
| Texas | N | 39 | 29 | 10 | 40 | 36 | 4 |
| Utah | N | 28 | 20 | 8 | 34 | 31 | 3 |
| Vermont | Y | 24 | 3 | 21 | 22 | 10 | 12 |
| Virginia | N*** | 34 | 21 | 13 | 33 | 31 | 2 |
| Washington | Y | 32 | 11 | 21 | 31 | 13 | 18 |
| West Virginia | Y | 42 | 13 | 29 | 35 | 14 | 21 |
| Wisconsin | N | 29 | 13 | 16 | 27 | 18 | 9 |
| Wyoming | N | 37 | 29 | 8 | 47 | 28 | 19 |

See appendix table notes on page 18.



Appendix Table 3: Change in share of uninsured citizen adults with incomes up to 138 percent of FPL in all areas, 2008/09 and 2015/16

| State | Expanded | All areas | | |
|----------------|----------|--------------------------|---------|----------------------|
| | | Uninsured rate (percent) | | decline (pct points) |
| | | 2008/09 | 2015/16 | 2008/09 to 2015/16 |
| United States* | | 34 | 20 | 14 |
| Alabama | N | 40 | 31 | 10 |
| Alaska | Y** | 51 | 34 | 17 |
| Arizona | Y | 28 | 19 | 9 |
| Arkansas | Y | 46 | 21 | 25 |
| California | Y | 28 | 11 | 17 |
| Colorado | Y | 31 | 12 | 20 |
| Connecticut | Y | 23 | 11 | 12 |
| Florida | N | 39 | 25 | 14 |
| Georgia | N | 42 | 32 | 10 |
| Hawaii | Y | 21 | 9 | 12 |
| Idaho | N | 41 | 30 | 11 |
| Illinois | Y | 33 | 12 | 20 |
| Indiana | Y** | 39 | 24 | 16 |
| Iowa | Y | 28 | 14 | 15 |
| Kansas | N | 34 | 24 | 10 |
| Kentucky | Y | 43 | 13 | 30 |
| Louisiana | Y** | 47 | 33 | 14 |
| Maine | N*** | 26 | 21 | 4 |
| Maryland | Y | 29 | 12 | 17 |
| Michigan | Y | 35 | 14 | 21 |
| Minnesota | Y | 24 | 10 | 14 |
| Mississippi | N | 44 | 34 | 10 |
| Missouri | N | 39 | 29 | 10 |
| Montana | Y** | 46 | 33 | 12 |
| Nebraska | N | 33 | 21 | 12 |
| Nevada | Y | 37 | 17 | 20 |
| New Hampshire | Y | 36 | 19 | 17 |
| New Mexico | Y | 37 | 17 | 20 |
| New York | Y | 21 | 10 | 11 |
| North Carolina | N | 37 | 26 | 11 |
| North Dakota | Y | 36 | 21 | 16 |
| Ohio | Y | 37 | 16 | 21 |
| Oklahoma | N | 47 | 35 | 12 |
| Oregon | Y | 38 | 14 | 24 |
| Pennsylvania | Y** | 29 | 17 | 12 |
| South Carolina | N | 42 | 28 | 14 |
| South Dakota | N | 42 | 45 | -3 |
| Tennessee | N | 37 | 26 | 11 |
| Texas | N | 39 | 30 | 9 |
| Utah | N | 29 | 21 | 8 |
| Vermont | Y | 23 | 8 | 15 |
| Virginia | N*** | 34 | 24 | 10 |
| Washington | Y | 32 | 11 | 21 |
| West Virginia | Y | 39 | 13 | 26 |
| Wisconsin | N | 28 | 14 | 14 |
| Wyoming | N | 44 | 28 | 15 |

See appendix table notes on page 18.



Appendix Table Notes

Table 1:

* Delaware, New Jersey, Rhode Island, and the District of Columbia were excluded from the analysis because they have no non-metro counties. Massachusetts was excluded because less than 2 percent of its population resides in non-metro counties. These states and D.C. are also excluded from the U.S. total.

** Five states that expanded Medicaid after December 31, 2014, (Alaska, Indiana, Louisiana, Montana, and Pennsylvania) are treated separately since much of the data collection occurred before expansion was effective.

*** Maine and Virginia have made decisions to expand, but enrollment has not begun.

Table 2:

* Delaware, New Jersey, Rhode Island, and the District of Columbia were excluded from the analysis because they have no non-metro counties. Massachusetts was excluded because less than 2 percent of its population resides in non-metro counties. These states and D.C. are also excluded from the U.S. total.

** Five states that expanded Medicaid after December 31, 2014, (Alaska, Indiana, Louisiana, Montana, and Pennsylvania) are treated separately since much of the data collection occurred before expansion was effective.

*** Maine and Virginia have made decisions to expand, but enrollment has not begun.

Note: Differences may vary due to rounding.

Table 3:

* Delaware, New Jersey, Rhode Island, and the District of Columbia were excluded from the analysis because they have no non-metro counties. Massachusetts was excluded because less than 2 percent of its population resides in non-metro counties. These states and D.C. are also excluded from the U.S. total.

** Five states that expanded Medicaid after December 31, 2014, (Alaska, Indiana, Louisiana, Montana, and Pennsylvania) are treated separately since much of the data collection occurred before expansion was effective.

*** Maine and Virginia have made decisions to expand, but enrollment has not begun.

Note: Differences may vary due to rounding.



Endnotes

¹ These data measure insurance status at the time of the survey interview; uninsured rates are lower if calculated as how many are uninsured for an entire year (13.3 percent in 2010 to 6.3 percent in 2017). R. Cohen, E. Zammiti, and M. Martinez, "Health Insurance Coverage: Early Release of Estimates from the National Health Interview Survey, 2017" (Washington: Centers for Disease Control and Prevention: National Center for Health Statistics, May 2018), available at <https://www.cdc.gov/nchs/data/nhis/earlyrelease/insur201805.pdf>.

² J. Hoadley et al., "Medicaid in Small Towns and Rural America: A Lifeline for Children, Families, and Communities" (Washington: Georgetown University Center for Children and Families and North Carolina Rural Health Research Program, June 2017), available at <https://ccf.georgetown.edu/2017/06/06/rural-health-report/>.

³ J. Foutz, S. Artiga, and R. Garfield, "The Role of Medicaid in Rural America" (Washington: Kaiser Family Foundation, April 25, 2017), available at <https://www.kff.org/medicaid/issue-brief/the-role-of-medicaid-in-rural-america/>.

⁴ R. Cohen, E. Zammiti, and M. Martinez, "Health Insurance Coverage: Early Release of Estimates from the National Health Interview Survey, 2017" (Washington: Centers for Disease Control and Prevention: National Center for Health Statistics, May 2018), available at <https://www.cdc.gov/nchs/data/nhis/earlyrelease/insur201805.pdf>.

⁵ R. Garfield, A. Damico, and K. Orgera, "The Coverage Gap: Uninsured Poor Adults in States that Do Not Expand Medicaid" (Washington: Kaiser Family Foundation, June 12, 2018), available at <https://www.kff.org/medicaid/issue-brief/the-coverage-gap-uninsured-poor-adults-in-states-that-do-not-expand-medicaid/>.

⁶ Delaware, New Jersey, Rhode Island, and the District of Columbia were excluded from the analysis because they have no micropolitan or noncore counties. Massachusetts was excluded because less than 2 percent of its population resides in counties that are micropolitan or noncore.

⁷ These states are: Arkansas, Idaho, Iowa, Kentucky, Maine, Mississippi, Montana, Nebraska, New Hampshire, New Mexico, North Dakota, Oklahoma, South Dakota, Vermont, West Virginia, and Wyoming.

⁸ See the Methodology section for a full description of the analytic approach in this report.

⁹ T. Brooks et al., "Medicaid and CHIP Eligibility, March 2018 Enrollment, Renewal, and Cost Sharing Policies as of January 2018: Findings from a 50-State Survey" (Washington: Kaiser Family Foundation, March 2018), available at <https://www.kff.org/medicaid/report/medicaid-and-chip-eligibility-enrollment-renewal-and-cost-sharing-policies-as-of-january-2018-findings-from-a-50-state-survey/>.

¹⁰ These parents are covered through a provision in the Social Security Act – §1902(a)(10)(A)(i)(1) – which requires states to cover parents based on a standard equivalent to states' previous AFDC standards.

¹¹ Unlike the counts in Figure 1, these counts include the five states with few or no non-metro counties. All these states expanded Medicaid as of January 1, 2014.

¹² M. Karpman and G. Kenney, "QuickTake: Health Insurance Coverage for Children and Parents: Changes between 2013 and 2017" (Washington: The Urban Institute, September 2017), available at <http://hrms.urban.org/quicktakes/health-insurance-coverage-children-parents-march-2017.html>; J. Hudson and A. Moriya, "Medicaid Expansion for Adults Had Measurable 'Welcome Mat' Effects on Their Children," *Health Affairs* 36, no. 9 (September 2017), available at <https://www.healthaffairs.org/doi/10.1377/hlthaff.2017.0347>.

¹³ "Health Coverage for Parents and Caregivers Helps Children" (Washington: Georgetown University Center for Children and Families, March 2017), available at <https://ccf.georgetown.edu/wp-content/uploads/2017/03/Covering-Parents-v2.pdf>.

¹⁴ J. Haley et al., "Medicaid/CHIP Participation Reached 93.7 Percent Among Eligible Children In 2016," *Health Affairs* 37, no. 8 (August 2018), available at <https://www.healthaffairs.org/doi/full/10.1377/hlthaff.2018.0417>.

¹⁵ E. K. Adams et al., "Pregnancy Insurance and Timely Prenatal Care for Medicaid Births: Before and After the Affordable Care Act in Ohio," *Journal of Women's Health*, (August 29, 2018), available at <https://www.liebertpub.com/doi/abs/10.1089/jwh.2017.6871>.

¹⁶ M. Holmes et al., "Geographic Variation in Plan Uptake in the Federally Facilitated Marketplace" (Chapel Hill: North Carolina Rural Research Program, September 2014), available at <https://www.ruralhealthresearch.org/alerts/30>; C. Drake, J. Abraham, and J. McCullough, "Rural Enrollment in the Federally Facilitated Marketplace," *Journal of Rural Health* 32, no. 3 (September 24, 2016): 332-339, available at <https://onlinelibrary.wiley.com/doi/abs/10.1111/jrh.12149>.

¹⁷ A. Searing and J. Hoadley, "Beyond the Reduction in Uncompensated Care: Medicaid Expansion Is Having a Positive Impact on Safety Net Hospitals and Clinics" (Washington: Georgetown University Center for Children and Families, June 2016), available at https://ccf.georgetown.edu/2016/06/07/medicaid_expansion_positive_impact_safety_net_hospitals_clinics/.

¹⁸ M. Cole et al., "Medicaid Expansion and Community Health Centers: Care Quality and Service Use Increased for Rural Patients" *Health Affairs* 37, no. 6 (June 2018): 900-907, available at <https://www.healthaffairs.org/doi/pdf/10.1377/hlthaff.2017.1542>.

¹⁹ R. Lindrooth, et al., "Understanding the Relationship Between Medicaid Expansions and Hospital Closures" *Health Affairs* 37, no. 1, (January 2018): 111-120, available at <https://www.healthaffairs.org/doi/10.1377/hlthaff.2017.0976>; A. Searing, "Study Documents How Medicaid Expansion Helps Keep Rural Hospitals Open" (Washington: Georgetown University Center for Children and Families, January 12,



2018), available at <https://ccf.georgetown.edu/2018/01/12/study-documents-how-medicaid-expansion-helps-keep-rural-hospitals-open/>.

²⁰ M. Holmes, "Financially Fragile Rural Hospitals: Mergers and Closures," *North Carolina Medical Journal* 76, no. 1, (January 2015): 37-40, available at <http://www.ncmedicaljournal.com/content/76/1/37.full>.

²¹ J. Hoadley et al., "Medicaid in Small Towns and Rural America: A Lifeline for Children, Families, and Communities" (Washington: Georgetown University Center for Children and Families and North Carolina Rural Health Research Program, June 2017), available at <https://ccf.georgetown.edu/2017/06/06/rural-health-report/>.

²² Applications of this approach can be found in T.C. Ricketts III, M. Holmes, "The Uninsured in North Carolina, 2004," *North Carolina Medical Journal* 67 no. 3 (2006): 235-236; and M. Holmes, "County-Level Estimates of the Number of Individuals in North Carolina Who Would Be Eligible for Coverage Under the Affordable Care Act's Expanded Insurance Options," *North Carolina Medical Journal* 74 no. 4 (2013): 343-347.

²³ Missouri Census Data Center, University of Missouri, <http://mcdc.missouri.edu/websas/geocorr12.html>.

²⁴ J.N.K. Rao, "Small Area Estimation" (Hoboken: John Wiley & Sons, Inc., 2003).

²⁵ The tables in this paragraph are from the American Fact Finder, U.S. Census Bureau, available at <https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk>.

²⁶ M. Ratcliffe et al., "Defining Rural at the U.S. Census Bureau" (Washington: United States Census Bureau, December 2016), available at <https://www.census.gov/library/publications/2016/acs/acsgeo-1.html>.

²⁸ J. Foutz, S. Artiga, and R. Garfield, "The Role of Medicaid in Rural America" (Washington: Kaiser Family Foundation, April 25, 2017), available at <https://www.kff.org/medicaid/issue-brief/the-role-of-medicaid-in-rural-america/>.

²⁷ Kaiser Family Foundation, "Status of State Action on the Medicaid Expansion Decision" (Washington: Kaiser Family Foundation, July 2018), available at <https://www.kff.org/health-reform/state-indicator/state-activity-around-expanding-medicaid-under-the-affordable-care-act/>.